LIST OF CURRENT CLAIMS

1. (Currently Amended) A regulating device comprising a balance and a plane hairspring for a time piece movement, the plane hairspring including in its outer turn a stiffened portion arranged to cause the deformations of the turns to be substantially concentric, wherein the spacing between a terminal portion of the outer turn and the last-but-one turn of the hairspring is large enough for said last-but-one turn to remain free radially during expansions of the hairspring up to amplitudes corresponding substantially to the maximum angle of rotation of [[a]] the balance in said movement.

2. (Previously Presented) The regulating device according to claim 1, wherein the maximum angle of rotation of the balance in said movement is slightly less than the knocking angle.

3. (Previously Presented) The regulating device according to claim 1, wherein the maximum angle of rotation of the balance in said movement is substantially equal to 330°.

4. (Previously Presented) The regulating device according to claim 1, wherein the spacing between the terminal portion of the outer turn and the last-but-one turn of the hairspring is large enough for said last-but-one turn to remain free radially during expansions of the hairspring up to amplitudes corresponding substantially to the knocking angle of the balance in said movement.

5. (Previously Presented) The regulating device according to claim 1, wherein the stiffened portion is a portion of strip of thickness in the plane of the hairspring greater than the thickness of the remainder of the strip forming the hairspring.

6. (Previously Presented) The regulating device according to claim 5, wherein the thickness in the plane of the hairspring of the stiffened portion varies over the entire length of the stiffened portion as a convex and continuous function and presents a minimum substantially equal to the thickness of the remainder of the strip at the two ends of the stiffened portion and a maximum that is greater than the thickness of the remainder of the strip between said two ends.

7. (Previously Presented) The regulating device according to claim 5, wherein the thickness in the plane of the hairspring of the stiffened portion is substantially constant over the entire length of said stiffened portion.

8. (Previously Presented) The regulating device according to claim 5, wherein the thickness in the plane of the hairspring of the stiffened portion is substantially constant over the entire length of said stiffened portion except in terminal portions where, respectively, the thickness decreases continuously towards the ends of said stiffened portion.

9. (Previously Presented) The regulating device according to claim 5, wherein the extra thickness defined by the stiffened portion relative to the remainder of the strip is situated exclusively on the outer side of the outer turn.

10. (Previously Presented) The regulating device according to claim 5, wherein the height of the hairspring is substantially constant over the entire length of said hairspring.

11. (Previously Presented) A time piece movement including a regulating device according to claim 1.

12. (Original) A time piece, such as a watch, including a movement according to claim 11.

13. (Previously Presented) A method of designing a regulating device having a balance and a plane hairspring for a time piece movement, in which method a stiffened portion is provided in the outer turn of the plane hairspring so as to cause the deformations of the turns to be substantially concentric, the method comprising providing a spacing between a terminal portion of the outer turn and the last-but-one turn of the hairspring, said spacing being large enough for said last-but-one turn to remain free radially during expansions of the hairspring up to amplitudes corresponding substantially to the maximum angle of rotation of a balance in said movement.

14. (Previously Presented) The method according to claim 13, wherein in order to design the plane hairspring with the stiffened portion, the following steps are performed:

· defining a plane hairspring of constant strip thickness;

· determining the unbalance of said plane hairspring;

· determining a portion of the outer turn of said plane hairspring having the same unbalance as the plane hairspring; and

· stiffening said outer turn portion.

15. (Previously Presented) The method according to claim 14, wherein the step of stiffening the outer turn portion comprises increasing its thickness in the plane of the hairspring.

16. (Previously Presented) The method according to claim 13, wherein in order to design the plane hairspring with the stiffened portion, the following steps are performed:

· defining a plane hairspring of constant strip section;

· determining the unbalance of said plane hairspring;

· determining a portion of the outer turn of said plane hairspring having the same unbalance as the plane hairspring; and

· varying the thickness, in the plane of the hairspring, of the strip forming the hairspring between an angle δ_1 and an angle δ_2 such that $\delta_1 < \beta_1$ and $\delta_2 > \beta_2$, where $\beta_2 - \beta_1$ is the angular extent of said portion of the outer turn, the thickness being caused to vary in accordance with a predetermined function f presenting a minimum substantially equal to the thickness of the remainder of the strip at the angles δ_1 and δ_2, the function f and the angles δ_1 and δ_2 being selected so that the deformation of the turn portion delimited by the angles δ_1 and δ_2 is substantially the same as the deformation which would occur if the thickness of the strip between the angles δ_1 and β_1 and between the angles β_2 and δ_2 were the same as that of the remainder of the hairspring and if, between the angles β_1 and β_2, the stiffness of the outer turn were equal to a predetermined value, greater than that of the remainder of the strip.

17. (Previously Presented) The method according to claim 16, wherein said predetermined value is infinite.

18. (Previously Presented) The method according to claim 16, wherein the predetermined function f is convex and continuous.

19. (Previously Presented) The method according to claim 13, wherein, in order to determine a spacing that is sufficient between the terminal portion of the outer turn and the last-but-one turn, the following steps are implemented:

· defining a first point on the radial axis passing through the outer end of an initial plane hairspring having a stiffened portion, the first point being situated beyond the last-but-one turn of said initial plane hairspring when said last-but-one turn is expanded by an amplitude corresponding to the maximum angle of rotation of the balance;

· defining a second point on the outer turn;

· interconnecting the first and second points by a circular arc that is tangential to the outer turn at the second point;

· defining a third point on the circular arc between the first and second points, the third point being such that the length of the segment of the circular arc delimited by the second and third points is equal to the length of the initial turn segment delimited by the second point and the initial outer end of the hairspring; and

· giving a thickness in the plane of the hairspring to the circular arc between the second and third points that is identical to the thickness of the initial turn segment, the resulting turn segment between the second and third points constituting a corrected terminal portion of the outer turn.

20. (Previously Presented) The method according to claim 19, wherein the second point is situated at the end of the stiffened portion that is further from the outer end of the hairspring.

21. (Previously Presented) The method according to claim 13, wherein, in order to determine a spacing that is sufficient between the terminal portion of the outer turn and the last-but-one turn, the following steps are implemented:

· defining a point on the outer turn in the stiffened portion;

· offsetting the terminal portion of the hairspring extending from said point radially outwards by giving the inner side of said terminal portion a circularly-arcuate shape the center of which is the geometrical center of the hairspring and the outer side of said terminal portion a shape that gives said terminal portion a thickness in the plane of the hairspring that is identical to the thickness of the corresponding initial terminal portion of the outer turn; and

· connecting the terminal portion with the remainder of the stiffened portion by a connection portion that forms a double bend.

22. (Previously Presented) A method of making a regulating device having a balance and a plane hairspring for a time piece movement, comprising designing the regulating device in accordance with the method as defined in claim 13, and then fabricating said regulating device.